

EXHIBIT A

Board of Trustees

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Putnam's Board of Trustees Biographies

The following individuals are members of Putnam's Board of Trustees:

» Jameson A. Baxter	» Elizabeth T. Kennan
» Charles B. Curtis	» Kenneth R. Leibler
» Myra R. Drucker	» Robert E. Patterson
» Charles E. Haldeman, Jr.	» George Putnam, III
» John A. Hill	» W. Thomas Stephens
» Paul L. Joskow	» Richard B. Worley



Jameson A. Baxter

(Born 1943), Trustee since 1994 and Vice Chairman since 2005

Ms. Baxter is the President of Baxter Associates, Inc., a private investment firm that she founded in 1986. Ms. Baxter serves as a Director of ASHTA Chemicals, Inc., Banta Corporation (a printing and digital imaging firm), Ryerson Tull, Inc. (a steel service corporation), the Mutual Fund Directors Forum, Advocate Health Care, and BoardSource, formerly the National Center for Nonprofit Boards. She is Chairman Emeritus of the Board of Trustees, Mount Holyoke College, having served as Chairman for five years and as a board member for thirteen years. Until 2002, Ms. Baxter was a Director of Intermatic Corporation (a manufacturer of energy control products).

Ms. Baxter has held various positions in investment banking and corporate finance, including Vice President and Principal of the Regency Group, and Vice President of and Consultant to First Boston Corporation. She is a graduate of Mount Holyoke College.



Charles B. Curtis

(Born 1940), Trustee since 2001

Mr. Curtis is President and Chief Operating Officer of the Nuclear Threat Initiative (a private foundation dealing with national security issues) and serves as Senior Advisor to the United Nations Foundation.

Mr. Curtis is a member of the Council on Foreign Relations and the Trustee Advisory Council of the Applied Physics Laboratory, Johns Hopkins University. Until 2003, Mr. Curtis was a member of the Electric Power Research Institute Advisory Council and the University of Chicago Board of Governors for Argonne National Laboratory. Prior to 2002, Mr. Curtis was a Member of the Board of Directors of the Gas Technology Institute and the Board of Directors of the Environment and Natural Resources Program Steering Committee, John F. Kennedy School of Government, Harvard University. Until 2001, Mr. Curtis was a

member of the Department of Defense Policy Board and Director of EG&G Technical Services, Inc. (a fossil energy research and development support company).

From August 1997 to December 1999, Mr. Curtis was a Partner at Hogan & Hartson L.L.P., a Washington, D.C. law firm. Prior to May 1997, Mr. Curtis was Deputy Secretary of Energy. He served as Chairman of the Federal Energy Regulatory Commission from 1977 to 1981 and has held positions on the staff of the U.S. House of Representatives, the U.S. Treasury Department, and the SEC.



Myra R. Drucker

(Born 1948), Trustee since 2004

Ms. Drucker is Chair of the Board of Trustees of Commonfund (a not-for-profit firm specializing in asset management for educational endowments and foundations), Vice Chair of the Board of Trustees of Sarah Lawrence College, and a member of the Investment Committee of the Kresge Foundation (a charitable trust). She is also a director of New York Stock Exchange LLC, a wholly-owned subsidiary of the publicly traded NYSE Group, Inc. a director of Interactive Data Corporation (a provider of financial market data, analytics, and related services to financial institutions and individual investors), and an advisor to RCM Capital Management (an investment management firm).

Ms. Drucker is an ex officio member of the New York Stock Exchange (NYSE) Pension Managers Advisory Committee, having served as Chair for seven years, and is a member of the Executive Committee of the Committee on Investment of Employee Benefit Assets.

Until August 31, 2004, Ms. Drucker was Managing Director and a member of the Board of Directors of General Motors Asset Management and Chief Investment Officer of General Motors Trust Bank. Ms. Drucker also served as a member of the NYSE Corporate Accountability and Listing Standards Committee and the NYSE/NASD IPO Advisory Committee.

Prior to joining General Motors Asset Management in 2001, Ms. Drucker held various executive positions in the investment management industry. Ms. Drucker served as Chief Investment Officer of Xerox Corporation (a technology and service company in the document industry), where she was responsible for the investment of the company's pension assets. Ms. Drucker was also Staff Vice President and Director of Trust Investments for International Paper (a paper, paper distribution, packaging, and forest products company) and previously served as Manager of Trust

Investments for Xerox Corporation. Ms. Drucker received a B.A. degree in Literature and Psychology from Sarah Lawrence College and pursued graduate studies in economics, statistics, and portfolio theory at Temple University.



Charles E. Haldeman, Jr.

(Born 1948), Trustee since 2004

Mr. Haldeman is President and Chief Executive Officer of Putnam, LLC ("Putnam Investments"). He is a member of Putnam Investments' Executive Board of Directors and Advisory Council. Prior to November 2003, Mr. Haldeman served as Co-Head of Putnam Investments' Investment Division.

Prior to joining Putnam Investments in 2002, Mr. Haldeman held executive positions in the investment management industry. He previously served as Chief Executive Officer of Delaware Investments and President & Chief Operating Officer of United Asset Management. Mr. Haldeman was also a partner and director of Cooke & Bieler, Inc. (an investment management firm).

Mr. Haldeman currently serves on the Board of Governors of the Investment Company Institute and as a Trustee of Dartmouth College, and he is a member of the Partners HealthCare Systems Investment Committee. He is a graduate of Dartmouth College, Harvard Law School, and Harvard Business School. Mr. Haldeman is also a Chartered Financial Analyst (CFA) charterholder.

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John A. Hill

(Born 1942), Trustee since 1985 and Chairman since 2000

Mr. Hill is Vice Chairman of First Reserve Corporation, a private equity buyout firm that specializes in energy investments in the diversified worldwide energy industry.

Mr. Hill is a Director of Devon Energy Corporation, TransMontaigne Oil Company, and various private companies controlled by First Reserve Corporation, as well as a Trustee of TH Lee, Putnam Investment Trust (a closed-end investment company advised by an affiliate of Putnam Management). He is also a Trustee of Sarah Lawrence College. Until 2005, he was a Director of Continuum Health Partners of New York.

Prior to acquiring First Reserve Corporation in 1983, Mr. Hill held executive positions in investment banking and investment management with several firms and with the federal government, including Deputy Associate Director of the Office of Management and

Budget and Deputy Director of the Federal Energy Administration. He is active in various business associations, including the Economic Club of New York, and lectures on energy issues in the United States and Europe. Mr. Hill holds a B.A. degree in Economics from Southern Methodist University and pursued graduate studies there as a Woodrow Wilson Fellow.

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Paul L. Joskow

(Born 1947), Trustee since 1997

Dr. Joskow is the Elizabeth and James Killian Professor of Economics and Management, and Director of the Center for Energy and Environmental Policy Research at the Massachusetts Institute of Technology.

Dr. Joskow serves as a Director of National Grid Transco (a UK-based holding company with interests in electric and gas transmission and distribution and telecommunications infrastructure) and TransCanada Corporation (an energy company focused on natural gas transmission and power services). Prior to February 2005, he served on the board of the Whitehead Institute for Biomedical Research (a non-profit research institution) and has been President of the Yale University Council since 1993. Prior to February 2002, he was a Director of State Farm Indemnity Company (an automobile insurance company), and, prior to March 2000, he was a Director of New England Electric System (a public utility holding company).

Dr. Joskow has published five books and numerous articles on topics in industrial organization, government regulation of industry, and competition policy. He is active in industry restructuring, environmental, energy, competition, and privatization policies - serving as an advisor to governments and corporations worldwide.

Dr. Joskow holds a Ph.D. and M. Phil from Yale University and a B.A. from Cornell University.



Elizabeth T. Kennan

(Born 1938), Trustee since 1992

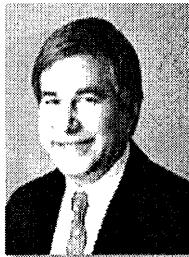
Dr. Kennan is a Partner of Cambus-Kenneth Farm (thoroughbred horse and cattle breeding). She is President Emeritus of Mount Holyoke College.

Dr. Kennan served as Chairman and is now Lead Director of Northeast Utilities. Until 2005, she was a Director of Talbots, Inc. She has served as Director on a number of other boards, including Bell Atlantic, Chastain Real Estate, Shawmut Bank, Berkshire Life Insurance, and Kentucky Home Life Insurance. She is a Trustee of the National Trust for Historic Preservation, of Centre College, and of Midway College in Midway, Kentucky. She is also a member of The Trustees of

Reservations. Dr. Kennan has served on the oversight committee of the Folger Shakespeare Library, as President of Five Colleges Incorporated, and as a Trustee of Notre Dame University, and is active in various educational and civic associations.

As a member of the faculty of Catholic University for twelve years, until 1978, Dr. Kennan directed the post-doctoral program in Patristic and Medieval Studies, taught history, and published numerous articles. Dr. Kennan holds a Ph.D. from the University of Washington in Seattle, an M.S. from St. Hilda's College at Oxford University, and an A.B. from Mount Holyoke College. She holds several honorary doctorates.

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Kenneth R. Leibler

(Born 1949), Trustee since 2006

Mr. Leibler is founding Chairman of the Boston Options Exchange, the nation's newest electronic marketplace for the trading of derivative securities.

Mr. Leibler currently serves as a Trustee of Beth Israel Deaconess Hospital in Boston. He is also lead director of Ruder Finn Group, a global communications and advertising firm; and is a director of Northeast Utilities, which operates New England's largest energy delivery system. Prior to 2007, he served as a director of the Optimum Funds group. Prior to October 2006, he served as a director of ISO New England, the organization responsible for the operation of the electric generation system in the New England states. Prior to 2000, Mr. Leibler was a director of the Investment Company Institute in Washington, D.C.

Prior to January 2005, Mr. Leibler served as Chairman and Chief Executive Officer of the Boston Stock Exchange. Prior to January 2000, he served as President and Chief Executive Officer of Liberty Financial Companies, a publicly traded diversified asset management organization. Prior to June 1990, he served as President and Chief Operating Officer of the American Stock Exchange, and is the youngest person in Exchange history to hold the title of President. Prior to serving as Amex President, he held the position of Chief Financial Officer, and headed its management and marketing operations. Mr. Leibler graduated magna cum laude with a degree in economics from Syracuse University, where he was elected Phi Beta Kappa.

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Robert E. Patterson

(Born 1945), Trustee since 1984

Mr. Patterson is Senior Partner of Cabot Properties, L.P.



and Chairman of Cabot Properties, Inc. (a private equity firm investing in commercial real estate).

Mr. Patterson serves as Chairman Emeritus and Trustee of the Joslin Diabetes Center and as a Director of Brandywine Trust Group, LLC. Prior to June 2003, he was a Trustee of Sea Education Association. Prior to December 2001, he was President and Trustee of Cabot Industrial Trust (a publicly traded real estate investment trust). Prior to February 1998, he was Executive Vice President and Director of Acquisitions of Cabot Partners Limited Partnership (a registered investment adviser involved in institutional real estate investments). Prior to 1990, he served as Executive Vice President of Cabot, Cabot & Forbes Realty Advisors, Inc. (the predecessor company of Cabot Partners).

Mr. Patterson practiced law, held various positions in state government, and was the founding Executive Director of the Massachusetts Industrial Finance Agency. Mr. Patterson is a graduate of Harvard College and Harvard Law School.



George Putnam, III

(Born 1951), Trustee since 1984 and President since 2000

Mr. Putnam is President of New Generation Research, Inc. (a publisher of financial advisory and other research services), and of New Generation Advisers, Inc. (a registered investment advisor to private funds). Mr. Putnam founded the New Generation companies in 1986.

Mr. Putnam is a Director of The Boston Family Office, LLC (a registered investment adviser). He is a Trustee of St. Mark's School and Shore Country Day School, and until 2002 was a Trustee of the Sea Education Association.

Mr. Putnam previously worked as an attorney with the law firm of Dechert LLP (formerly known as Dechert Price & Rhoads) in Philadelphia. He is a graduate of Harvard College, Harvard Business School, and Harvard Law School.

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W. Thomas Stephens

(Born 1942), Trustee since 1997

Mr. Stephens is Chairman and Chief Executive Officer of Boise Cascade, L.L.C. (a paper, forest products, and timberland assets company).

Mr. Stephens serves as a Director of TransCanada Pipelines Limited. Until 2004, Mr. Stephens was a

Director of Xcel Energy Incorporated (a public utility company), Qwest Communications, and Norske Canada, Inc. (a paper manufacturer). Until 2003, Mr. Stephens was a Director of Mail-Well, Inc. (a diversified printing company). He served as Chairman of Mail-Well until 2001 and as CEO of MacMillan-Bloedel, Ltd. (a forest products company) until 1999.

Prior to 1996, Mr. Stephens was Chairman and Chief Executive Officer of Johns Manville Corporation. He holds B.S. and M.S. degrees from the University of Arkansas.



Richard B. Worley

(Born 1945), Trustee since 2004

Mr. Worley is Managing Partner of Permit Capital, LLC, an investment management firm.

Mr. Worley serves on the Executive Committee of the University of Pennsylvania Medical Center, is a Trustee of The Robert Wood Johnson Foundation (a philanthropic organization devoted to health-care issues), and is a Director of The Colonial Williamsburg Foundation (a historical preservation organization). Mr. Worley also serves on the investment committees of Mount Holyoke College and World Wildlife Fund (a wildlife conservation organization).

Prior to joining Permit Capital LLC in 2002, Mr. Worley served as Chief Strategic Officer of Morgan Stanley Investment Management. He previously served as President, Chief Executive Officer, and Chief Investment Officer of Morgan Stanley Dean Witter Investment Management and as a Managing Director of Morgan Stanley, a financial services firm. Mr. Worley also was the Chairman of Miller Anderson & Sherrerd, an investment management firm.

Mr. Worley holds a B.S. degree from University of Tennessee and pursued graduate studies in economics at the University of Texas.

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Investors should carefully consider the investment objectives, risks, charges, and expenses of a fund before investing. For a prospectus containing this and other information for any Putnam fund or product, contact your financial representative, call Putnam at 1-888-4-PUTNAM (1-888-478-8626), or click on the [prospectus section](#) to view or download a prospectus. To access a prospectus containing Y share information, contact your retirement plan administrator. Please read the prospectus carefully before investing.

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